

Charles Morehouse remarks for the Owen Chamberlain Memorial Ceremony, 30 April, 2006

Hello everyone. I am Chuck Morehouse, a graduate student in the Chamberlain Group during the years 1965-1970. I can remember clearly my first contact with the Chamberlain Group. Our first year of graduate school was one of classes and exams. Our classmates were the best of the best from all around the country and world. Survival in this highly competitive environment was the limit of my horizon at this time. I managed to pass my Prelims, written and orals, and hadn't really given a lot of thought to a thesis program. At a seminar I was approached by Gil Shapiro, who knew me from my undergraduate advanced physics lab where he had been the instructor and Clay Johnson the TA. Gil asked first if I had passed my exams, and then if I had signed up for a research project. He said that the Chamberlain Group was looking for new members and asked if I would like to come by to see what they were doing and consider joining the group. I had been an undergraduate student at Berkeley from 1960-1964, and Owen was a prominent campus figure, for his scientific and social and political activities. I can remember going home that evening and telling my wife, Honor, that I might be able to join the Chamberlain Group. This seemed to me to be a dream come true. I tried to appear as if I needed to be convinced of the merits of the Chamberlain Group research program as I visited the Rad Lab for the first time, but I was floating on a cloud. During that visit, I met Owen for the first time.

A transition was underway in the Chamberlain Group at the time I joined. Several veteran group members were leaving and so the group needed to build its numbers back up. The group of us joining at more or less the same time besides me were Bill Gorn, Tom Powell, Peter Robrish, Steve Rock and Steve Shannon. Partly because of our coming in more or less at the same time, and partly because of our many mutual interests, we formed a fairly close group. We particularly liked outdoor activities, and went on a number of outings. A photo on the photo table shows our group of graduate students (minus Bill Gorn) at Ediza Lake in the Sierra Nevada.

As with all new graduate students, we had a great deal to learn before we became useful to the group. We were given the choice of which parts of the experiments to learn first. One very good thing about the Chamberlain Group operation was that with each new experiment we would routinely switch responsibilities to a new part of the experimental apparatus. This way we developed a thorough understanding of all the parts of these complex experiments. I can recall initially being overwhelmed by the diversity and complexity of the experiments the Chamberlain Group was pursuing. First there was the particle physics, which was entirely new to us and in a tumultuous period besides. Then there was the experimental equipment: beam lines, fast electronics, coincidence logic, scintillation counters, photomultipliers, high voltage power supplies, computers to take data and analyze the results. Some of our fellow students in other groups had to deal with all of this. But for us, there was in addition the polarized target – what a wonderful creation that was! Those of us in the group soon realized that we had to learn the background information for the equivalent of two PhDs – one in particle physics and one in solid state physics. We had the great good fortune to learn about vacuum systems,

cryogenics, nuclear magnetic resonance, radio frequency systems, electron spin resonance, microwave systems and spin-exchange polarization. What an unbelievable opportunity for young physicists. To this day my wife still remembers “Neodymium-doped Lanthanum Magnesium Nitrate” – probably from my muttering about it in some nightmare.

Owen’s scientific fame and social conscience contributed to his being called upon to lend his weight to many activities outside supervising us graduate students. I can recall one time when we were in the counting house at the Bevatron, and photographers showed up to get a publicity shot of Owen. We were in the midst of a discussion about something, and I started to excuse myself to get out of the shot, but Owen said: “Just ignore the photographers, let’s just keep on talking.” One of the photographs on the photo table records this incident, with Owen, Lee Holloway and me discussing some bit of the experiment. Owen’s fame and sense of responsibility also pushed him into situations I am sure that he would have liked to avoid. Once he was called upon to debate Edward Teller in a big forum at Harmon Gym. I asked him why in the world would he take part in such a debate and he said: “Oh everyone’s afraid of Edward, and someone needs to speak on the opposite side of the debate.” I can remember attending the debate, and Teller was his normally bombastic self, while Owen would counter in his calm manner with carefully crafted arguments which I thought were much more convincing.

So far my remarks have been about Owen as a group leader. As a physicist and advisor he was even more wonderful. A physics story I can recall involves our group of graduate students sitting around in a seminar room trying to describe lasers to one another. Owen came by, and we asked him to describe how lasers worked. Owen took a puff on his pipe, gave us a look and started: “Well, you start with the Einstein equations.” (He cast a sidelong glance at us, and I at least hurriedly wrote a note to look up the Einstein Equations!) Well Owen then proceeded to derive Light Amplification by Stimulated Emission of Radiation in the space of the blackboard. I was awestruck by the performance – clear, precise, understandable and spontaneous. I think all of his graduate students could come up with similar examples – and see back to an example Fermi must have set for Owen when he was a student.

Another amazing example of Owen’s scientific ability came during our experiments down at SLAC. He was getting busier and busier, and told us that he couldn’t be counted on for a major part of the experiment workload, but that he wanted to contribute to each experiment. He visited the SLAC End Station A Counting House one time when we were there, and started inquiring about all the indicator lights showing the state of the beam, the trigger, etc. He zeroed in on one particular indicator light, the “Master Trigger” light. He kept asking questions about it, which led to our getting out logic diagrams, then wiring diagrams, and finally an oscilloscope. He started hooking up oscilloscope probes, trying to make sense of the Master Trigger. Well, after about two hours, and a thousand questions, he had uncovered a subtle error in the Master Trigger logic. This led to a small correction in the dead time calculation for the time-reversal experiment, as well as all other experiments done previously in End Station A! (It didn’t really matter to the conclusions of either the time reversal experiments or the previous

End Station A experiments, but it was an impressive example of how Owen could focus on an issue, and dig deeper and deeper until he got to the bottom of it.)

Over time I have thought about what Owen taught me about “doing physics”. At the time we were working together, physics seemed like something that could be done no other way, and so I couldn’t distinguish what was unique about it. My career went from academic particle physics to industrial R&D, and I now have a better perspective. Owen helped me to see physics as something to be discovered, not conquered. He exemplified the philosophy that physics is elegant, beautiful, and simple at its core if one has the ability and wherewithal to see it. Even more fundamental to an experimentalist is the motto I heard him express many times: “Look at the data; it is trying to tell you a story.” My own career has played across the boundary of science and engineering – and this motto has come back to me time after time. Particularly in an engineering environment, when one makes a measurement that is meant to support some position, or show that some action is correct, I can picture Owen saying: “Look at the data; it is trying to tell you a story.” The data might not necessarily support what one is trying to show, but could be illuminating a deeper story. This philosophy also extends to measurements in the political and social arena! As I reflect on the influence Owen has had on me as one of his graduate students, it is a love of physics, an appreciation of fundamentals, both physical and social, and an intellectual honesty about what we see in the world around us.

And finally, to me Owen was a very approachable person. Another of the photographs I brought along show me in conversation with Owen at some conference or other after I had graduated. We are both very relaxed and having a conversation as equals. Of course we were not equals in many ways, but I always felt comfortable around him. I was very fortunate to have him as a mentor, colleague and friend.